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COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE

October 9, 1996

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE (ACQUISITION AND TECHNOLOGY)
VICE CHAIRMAN JOINT CHIEFS OF STAFF
ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE)

SUBJECT: First Year Tasks and Activities for the C4ISR Decision Support Center

In accordance with the procedures established for reviewing and prioritizing the tasks assigned to the C4ISR Decision Support Center (DSC), the attached is forwarded to you for approval. The tasks are presented in summary fashion to provide you more detail than could be gleaned from a study title. The first three tasks were derived from guidance you provided when you were presented with the in process review. Each is also related to a potential decision that might ensue when the task is completed. The task designated as "infrastructure" is internal to the DSC, but is necessary and must be performed in the first year.

With your approval of the tasks, the DSC implementation team will immediately initiate detailed planning and be prepared to execute the approved tasks as FY 97 funding becomes available.

Dennis M. Nagy
Director
C4I Integration Support Activity

Attachments

ASD(C3I) DECISION:	VICE CHAIRMAN DECISION:	USD (A&T) DECISION:
Approved 10/18/96	Approved	Approved OCT 2 2 1996
Disapproved	Disapproved	Disapproved
Other	Other	Other

What are deliverables & schedule - I assume they will be in plan to come.

DSC STUDY TASK #1

Title: Precision Engagement C4I Operational Architecture Study (Sensor-to-Shooter III)

Source: JROC: 13 Dec 95 JROC

Decision: What investments in joint, interoperable links should be made to implement an integrated system of systems communications network by 2010 to support the warfighter in joint and combined combat operations?

Impact: Provide definitive C4ISR input to the FY98 Chairman's Program Requirements recommending to the SECDEF specific investments in network interoperability that will provide improved weapon systems performance.

Objectives: For each warfighting mission area, recommend the specific investments that will provide joint communications links to achieve an integrated system of systems network architecture by 2010. Ensure that the investments are operationally sound, technically feasible, and cost effective over the FYDP. Use the results of this study as a representative methodology for similar C4ISR analyses.

Issues: Earlier analytic efforts such as STS I and II have examined selected problems related to information sharing among elements of joint forces. STS I looked at how sensor data from 10 airborne platforms could be shared among the four services by using appropriate communication links. STS II assessed where investments should be made to provide an integrated targeting support architecture for JDAM, JSOW and ATACMS and what changes to the acquisition documents should be made to ensure C4ISR requirements are accounted for in the development of the weapon.

STS III builds on the analytic lessons learned in these prior efforts, by examining alternatives for the joint links supporting the C4ISR System of Systems for Joint Vision 2010, focusing on suppression of enemy air defenses, close air support, theater air defense, operational maneuver from the sea, and brigade deliberate attack. The following issues are to be addressed in FY 1997:

- What joint links should be used to support HARM employment in SEAD missions?
- What joint links should be used to support Close Air Support Aircraft delivered weapons?
- What joint links should be used to support SAM employment against cruise missiles for Theater Air Defense?
- What joint links should be used for Navy Gun Fire Support in support of forces in Operational Maneuver from the Sea?

- What joint links should support brigade deliberate attack in USMC and USA joint maneuver operations?

DSC STUDY TASK #2

Title: Integrated Assessment of C4I Mission Assessment / DAWMS / STS Study Results

Source: USD(A&T) / ASD(C3I)/ Strike JWCA

Decision: What is the most cost effective trade-off between investments in weapons and C4ISR systems to accomplish the precision strike mission ?

Impact: In support of the preparation of FY99 POM, provide acquisition decision makers with information on how the combined mix of weapons systems and C4ISR systems can be configured for optimal performance, in the context of precision strike missions.

Objectives: Using the precision strike mission analysis of the STS studies as a reference baseline, conduct a CMA follow-on analysis to evaluate the cost-benefit trade-offs between specific combinations of CMA-derived C4ISR systems and DAWMS-derived precision strike weapons. Establish the cost-benefit relationships between the number and kinds of weapons and supporting C4ISR systems that are required to achieve a given level of mission performance. Compare and contrast total costs for different mixes of C4ISR systems and precision strike weapons and their platforms for that level of mission effectiveness.

Issues: The following three C4ISR/weapon mix study efforts have been accomplished or are currently underway. Each effort treats C4ISR capabilities differently, making the derivation of common findings difficult.

1. The Deep Attack Weapons Mix Study (DAWMS) will produce recommendations for the optimal mix of weapon systems to accomplish various deep strike missions.

2. The C4ISR Mission Assessment (CMA) study will recommend an integrated architecture and investment strategy for implementing joint C4ISR systems in support of a variety of missions, including deep attack.

3. The "Sensor-to-Shooter" series of analyses continues to examine the contribution of joint communications links to the precision strike, dominant maneuver, and coordinated defense missions. It has made recommendations on investments for joint links leading to an integrated System of Systems to support these mission areas by the year 2010.

The results of these three efforts need to be integrated to determine how weapons mix depends on configuration and capabilities of the supporting C4ISR system architecture. That is, what are the trade-offs between the weapons mix recommendations from DAWMS and the C4ISR architecture from CMA, such that a specific level of mission performance can be maintained? How can weapon

procurement levels be reduced without loss of mission performance by acquiring additional C4ISR systems? Are such trade-offs between dissimilar systems cost effective?

DSC STUDY TASK #3

Title: DSC Support to External MILSATCOM Study Efforts

Source: USD(A&T)

Decision: What are the costs and benefits of using unmanned aerial vehicles (UAVs) as theater and tactical communications links, in place of or in addition to C4I SATCOM systems?

Impact: Provide the acquisition planner with analysis of cost and performance of various mixes of airborne relay systems on UAVs to supplement SATCOM systems to populate an effective joint communications architecture in support of the warfighter.

Objectives: Provide analytic support to ASD(C3I) and USD(A&T) to identify and evaluate the trade-offs relevant to the operation of a mix of airborne and spaceborne communication systems. Assess the cost effectiveness of these alternatives to meet the communications requirements for selected theater and tactical missions. Use this focused analysis of a defined mission area to demonstrate the analytic methodology for such analysis and to describe procedures that would allow it to be extended into other mission areas in the future.

Issues: Analytic work of considerable scope is currently underway at various other organizations to define the future mission, architecture, and system requirements for military communications systems, including MILSATCOM. This is a very broad subject area, and one for which the DSC does not have the lead analytic role. It is therefore appropriate to view DSC involvement in this area in terms of how it can provide analytic support to ongoing studies being conducted by other organizations. The DSC is chartered to provide both technical and financial resources to assist C4ISR study tasks being done in other organizations, within the limits of the DSC mission to study joint C4ISR systems.

An example of where the DSC will be able to provide useful support to ongoing studies is the most cost-effective mix of spaceborne and airborne communication systems to provide the functionality required for theater and tactical operations. Such analysis would examine how alternative joint systems, operating from different environments (satellite, manned and unmanned airborne relay, land lines, fiber optic networks, etc.) can be configured as an integrated system to provide the most accurate, reliable and timely means of delivering mission critical information to the warfighter. This specific task would focus on the trade-offs between the use of UAVs and satellite communications systems in this role.

CORE DSC TASK

Title: DSC Analytic Infrastructure:
Design and Implementation of a C4ISR Program and Study Data Base

As described in the DSC Implementation Plan, about one-third of the DSC resources will be routinely allocated to development of an *analytic infrastructure,* in the form of virtual libraries of C4ISR related information, including data on models and simulations, system parameters, programs and activities in government and industry, and copies of the documentation from those activities. This collection will provide DSC study teams with links to substantial libraries of information and tools to support their own analysis, and thereby minimize reinventing existing results with each new project.

Aside from the general objective of infrastructure development as a key part of DSC capabilities, the DSC needs to focus much of its first year infrastructure effort on identifying the programs and studies that are currently being or have recently been conducted within the C4ISR community as a whole. At the recommendation of JS/J-2, this is a special problem area where the breadth of study activities in the C4ISR community has not been fully documented in one convenient place. There are a considerable number of such activities in many different organizations, estimated by J-2 to have a cost of approximately $49 million a year. The scope of this uncoordinated effort is of great concern, since there is as yet no organized effort to resolve duplication and inconsistencies between such studies.

This core DSC task will begin the process of identifying and describing C4ISR related study, research, and development programs across the set of agencies, laboratories and program offices in the government, and in similar organizations in private industry and academia. It will describe the goals and objectives of these programs, the C4ISR systems they relate to, and the tools, data, and assumptions they are using. It will organize this information into a data base that allows users to locate other C4ISR efforts by sponsor, subject area, systems, and other parameters. Finally, it will develop procedures for updating this data system on a regular basis, so as to keep its contents fresh and relevant.